25 ~~77~~. The apparatus of claim 24 ~~76~~ wherein the first and second electrodes are positioned to be spaced apart from the microelectronic substrate when the microelectronic substrate is supported by the support member.

Sub C1

26 ~~78~~. The apparatus of claim 24 ~~76~~ wherein the first electrode pair is positioned a first distance from a surface of the microelectronic substrate and the second electrode pair is positioned a second distance from the surface of the microelectronic substrate when the support member supports the microelectronic substrate, with the first distance greater than the second distance.

27 ~~79~~. The apparatus of claim 24 ~~76~~, further comprising a third and fourth electrode pair, the third and fourth electrode pairs each including two spaced apart electrodes, the first and second electrode pair spaced apart from each other by a first distance and the third and fourth electrode pair spaced apart from each other by a second distance greater than the first distance.

28 ~~80~~. The apparatus of claim 24 ~~76~~ wherein an amplitude of varying current supplied to the first and second electrodes is different than an amplitude of varying current supplied to the third and fourth electrodes.

29 ~~81~~. The apparatus of claim 24 ~~76~~ wherein a frequency of varying current supplied to the first and second electrodes is higher than a frequency of varying current supplied to the third and fourth electrodes.

REMARKS

At the time the present Office Action was mailed, claims 1-81 were pending, with claims 4, 10-12, 15, 19-21, 27, 28, 33-36, 38, 45, 46, 51, 54, 57-60, 64, 65, 70-73, 78 and 79 withdrawn in response to a Restriction Requirement. Of the withdrawn claims, claims 38, 45, 46, 78 and 79 depend from allowable claims and have been indicated to be allowable. Claims 1, 2, 5, 13, 14, 16-18, 23, 26, 29-31, 39-42, 49, 50, 61-63, 66, 67, 74 and

75 have been cancelled in the present Response, and claims 3, 6-9, 22, 24, 25, 32, 52, 53, 55, 56, 68 and 69 have been amended to be in independent form.

In the Office Action mailed May 10, 2002, the Examiner rejected several of the pending claims and allowed the remaining pending claims. More specifically, the status of the application is as follows:

(A) The specification was objected to due to informalities at page 10;

(B) Claim 18 stands rejected under 35 U.S.C. § 112, second paragraph;

(C) Claims 1, 2, 5, 13, 14, 16, 23, 26, 29, 31, 39-42, 49, 50, 61-63, 66, 67, 74 and 75 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,398,190 to Easter ("Easter");

(D) Claims 17, 18 and 30 stand rejected under 35 U.S.C. § 103 as being unpatentable over Easter; and

(E) Claims 37, 38, 43-48, and 76-81 are allowed and claims 3, 6-9, 22, 24, 25, 32, 52, 53, 55, 56, 68 and 69 were indicated to be allowable if rewritten in independent form.

The undersigned attorney wishes to thank the Examiner for engaging in a brief telephone conference on September 10, 2002 during which the foregoing rejections were discussed. As described in greater detail below, applicant has cancelled all non-allowed claims and accordingly, all the remaining pending claims are in condition for allowance.

A. Response to the Objection to the Specification

The specification was objected to because of informalities in the last paragraph of page 10. These informalities have been corrected and accordingly the objection to the specification should be withdrawn.

B. Response to the Section 112 Rejection

Claim 18 was rejected under 35 U.S.C. § 112, second paragraph. Claim 18 has been cancelled and accordingly, the Section 112 rejection of claim 18 is not moot.

C. Response to the Section 102 Rejections

All the claims rejected under 35 U.S.C. § 102 have been cancelled and accordingly, the Section 102 rejection of these claims is now moot.

D. Response to the Section 103 Rejections

Claim 17, 18 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Easter. These claims have been cancelled and accordingly, the Section 103 of these claims is now moot.

E. Response to the Indication of Allowable Subject Matter

Claims 37, 38, 43-48, and 76-81 were allowed. Accordingly, these claims have not been amended. Claims 3, 6-9, 22, 24, 25, 32, 52, 53, 55, 56, 68 and 69 were objected to as being dependent upon a rejected base claims but were indicated to be allowable if rewritten in independent form to include all the limitations of the claims from which they depend. These claims have been so amended without narrowing the scope of the claims, and accordingly, these claims are in condition for allowance.

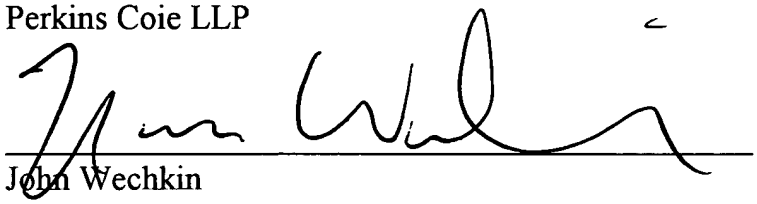
F. Conclusion

In light of the foregoing amendments and remarks, all of the pending claims are in condition for allowance. Applicant, therefore, requests reconsideration of the application and an allowance of all pending claims. If the Examiner wishes to discuss the above-noted distinctions between the claims and the cited references, or any other distinctions, the Examiner is encouraged to contact John Wechkin by telephone.

Additionally, if the Examiner notices any informalities in the claims, he is also encouraged to contact John Wechkin to expediently correct any such informalities.

Respectfully submitted,

Perkins Coie LLP



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Appendix (Marked-up version of claims)
Appendix (Marked-up version of specification)
Petition for Extension of Time

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Appendix – Specification
Marked to Show Changes

The paragraph at lines 25-31 of page 10:

In one embodiment, electrodes 720a and 720b can be grouped to form an electrode pair 770a, with each electrode 720a and 720b coupled to an opposite terminal of a current supply 121 (Figure 3). The electrodes ~~770a~~ 720a and ~~770b~~ 720b can have an elongated or strip-type shape and can be arranged to extend parallel to each other over the diameter of the substrate 110. The spacing between adjacent electrodes of an electrode pair ~~370a~~ 770 can be selected to direct the electrical current into the substrate 110, as described above with reference to Figure 3.

Appendix – Claims
Marked to Show Changes

3. (Amended) ~~The method of claim 1 wherein the microelectronic substrate has a surface facing toward the first and second electrodes, further~~ A method for removing an electrically conductive material from a microelectronic substrate, comprising:

selecting ~~the~~ first and second conductive electrodes to have a combined surface area facing toward ~~the~~ a surface of the microelectronic substrate that is less than the area of the surface of the microelectronic substrate; ~~and~~

positioning the first conductive electrode proximate to the microelectronic substrate;

positioning the second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode;

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first and second electrodes are spaced apart from the conductive material of the microelectronic substrate; and

moving at least one of the microelectronic substrates and the electrodes relative to the other while applying an electrical current to the at least one electrode.

6. (Amended) ~~The method of claim 1, further comprising~~ A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode;

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first and second electrodes are spaced apart from the conductive material of the microelectronic substrate; and

varying an amplitude and/or polarity of the current at a first frequency and superimposing on the first frequency an amplitude variation having a second frequency less than the first frequency.

7. (Amended) ~~The method of claim 1 wherein the microelectronic substrate has a planform shape, further comprising~~ A method for removing an electrically conductive material from a microelectronic substrate having a planform shape, the method comprising:

selecting ~~the~~ a first conductive electrode to have a planform shape generally similar to a first portion of the planform shape of the microelectronic substrate and selecting ~~the~~ a second conductive electrode to have a planform shape generally similar to a second portion of the planform shape of the microelectronic substrate;

positioning the first conductive electrode proximate to the microelectronic substrate;

positioning the second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode; and

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first and second electrodes are spaced apart from the conductive material of the microelectronic substrate.

8. (Amended) ~~The method of claim 1 wherein the first and second electrodes define an electrode pair and the conductive material is a first portion of conductive material, and wherein the method further comprises:~~ A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode, the first and second electrodes defining a first electrode pair;

removing a first portion of the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first

and second electrodes are spaced apart from the conductive material of the microelectronic substrate;

positioning a second electrode pair proximate to the microelectronic substrate; and

applying a varying current to the second electrode pair to remove a second portion of conductive material from the microelectronic substrate.

9. (Amended) ~~The method of claim 1 wherein applying a varying current includes applying~~A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode;

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first and second electrodes are spaced apart from the conductive material of the microelectronic substrate, the varying current including at least one of a single phase and a multi-phase alternating current ~~to at least one of the first and second electrodes~~.

22. (Amended) ~~The method of claim 1, further comprising~~A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode;

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes while the first and second electrodes are spaced apart from the conductive material of the microelectronic substrate; and

at least restricting contact between the first electrode and a liquid adjacent to the first conductive material of the microelectronic substrate by disposing a dielectric film between the first electrode and the liquid.

24. (Amended) ~~The method of claim 23, further comprising~~ A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode;

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes without contacting the first and second electrodes directly with the conductive material of the microelectronic substrate; and

varying an amplitude and/or polarity of the current at a first frequency and superimposing on the first frequency an amplitude variation having a second frequency less than the first frequency.

25. (Amended) ~~The method of claim 23 wherein the first and second electrodes define an electrode pair and the conductive material is a first portion of conductive material, and wherein the method further comprises:~~ A method for removing an electrically conductive material from a microelectronic substrate, comprising:

positioning a first conductive electrode proximate to the microelectronic substrate;

positioning a second conductive electrode proximate to the microelectronic substrate and spaced apart from the first conductive electrode, the first and second electrodes defining a first electrode pair; and

removing the conductive material from the microelectronic substrate by passing a varying current through the first and second electrodes without contacting the first and second electrodes directly with the conductive material of the microelectronic substrate;

positioning a second electrode pair proximate to the microelectronic substrate; and

applying a varying current to the second electrode pair to remove a second portion of conductive material from the microelectronic substrate.

32. (Amended) ~~The method of claim 29, further comprising~~ A method for forming a planarizing medium, comprising:

forming a planarizing pad body having a planarizing surface to engage a surface of a microelectronic substrate;

disposing a first electrode at least adjacent to the planarizing pad body and spaced apart from the planarizing surface with the first electrode coupleable to a source of varying current;

disposing a second electrode at least adjacent to the planarizing pad body with the second electrode spaced apart from the first electrode;

disposing a dielectric material between the first and second electrodes; and

disposing a dielectric film between the planarizing surface and the electrodes.

52. (Amended) ~~The apparatus of claim 49, further comprising~~ An apparatus for removing conductive material from a microelectronic substrate, comprising:

a support member having at least one engaging surface to support the microelectronic substrate;

a first electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member;

a second electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member, the second electrode being spaced apart from the first electrode, at least one of the first and second electrodes being coupleable to a source of varying current; and

a dielectric layer at least proximate to the first electrode, the dielectric layer being positioned between the microelectronic substrate and the first electrode when the microelectronic substrate is supported by the support member.

53. (Amended) ~~The apparatus of claim 49, further comprising the current source, the~~ An apparatus for removing conductive material from a microelectronic substrate, comprising:

a support member having at least one engaging surface to support the microelectronic substrate;

a first electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member;

a second electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member, the second electrode being spaced apart from the first electrode; and

a current source configured to vary an amplitude of the current at a first frequency, the current source including an amplitude modulator to superimpose on the first frequency an amplitude and/or polarity variation having a second frequency less than the first frequency, wherein at least one of the first and second electrodes is coupleable to the current source.

55. (Amended) ~~The apparatus of claim 49 wherein the first and second electrodes define a first electrode pair, and wherein the apparatus further comprises:~~ An apparatus for removing conductive material from a microelectronic substrate, comprising:

a support member having at least one engaging surface to support the microelectronic substrate;

a first electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member;

a second electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member, the second electrode being spaced apart from the first electrode, the first and second electrodes defining a first electrode pair, at least one of the first and second electrodes being coupleable to a source of varying current;

a third electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member; and

a fourth electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member, the fourth electrode being spaced apart from the third electrode, at least one of the third and fourth electrodes being coupleable to a source of varying current.

56. (Amended) ~~The apparatus of claim 49, further comprising the current source, and further wherein the~~ An apparatus for removing conductive material from a microelectronic substrate, comprising:

a support member having at least one engaging surface to support the microelectronic substrate;

a first electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member; and

a second electrode spaced apart from the support member and from the microelectronic substrate when the microelectronic substrate is supported by the support member, the second electrode being spaced apart from the first electrode; and

a current source that includes a single phase or a multi-phase alternating current supply, wherein at least one of the first and second electrodes is coupleable to the current source.

68. (Amended) ~~The apparatus of claim 66, further comprising the current source, further wherein the~~ An apparatus for removing a conductive material from a microelectronic substrate, comprising:

a carrier having at least one engaging surface to support a microelectronic substrate;

a polishing pad proximate to the carrier and having a polishing surface to engage the microelectronic substrate, at least one of the polishing pad and the carrier being movable relative to the other;

a first electrode proximate to the polishing surface; and

a second electrode proximate to the polishing surface and spaced apart from the first electrode; and

a current source ~~is~~ configured to vary an amplitude of the current at a first frequency, ~~still~~ further wherein the current source includes an amplitude modulator to superimpose on the first frequency an amplitude and/or polarity variation having a second frequency less than the first frequency, and wherein at least one of the first and second electrodes is coupleable to the current source.

69. (Amended) ~~The apparatus of claim 66 wherein the first and second electrodes define a first electrode pair, and wherein the apparatus further comprises:~~An apparatus for removing a conductive material from a microelectronic substrate, comprising:

a carrier having at least one engaging surface to support a microelectronic substrate;

a polishing pad proximate to the carrier and having a polishing surface to engage the microelectronic substrate, at least one of the polishing pad and the carrier being movable relative to the other;

a first electrode proximate to the polishing surface;

a second electrode proximate to the polishing surface and spaced apart from the first electrode, at least one of the first and second electrodes being coupleable to a source of varying electrical current, the first and second electrodes defining a first electrode pair;

a third electrode spaced apart from the carrier and from the microelectronic substrate when the microelectronic substrate is supported by the carrier; and

a fourth electrode spaced apart from the carrier and from the microelectronic substrate when the microelectronic substrate is supported by the carrier, the fourth electrode being spaced apart from the third electrode, at least one of the third and fourth electrodes being coupleable to a source of varying current.